

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)



Applicant's or agent's file reference P1336/WOD	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 02/04545	International filing date (day/month/year) 07.10.2002	Priority date (day/month/year) 07.10.2002
International Patent Classification (IPC) or both national classification and IPC G01N21/17		
Applicant THE SECRETARY OF STATE FOR DEFENCE DSTL et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 29.04.2004	Date of completion of this report 14.01.2005
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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB 02/04545

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-19 as originally filed

Claims, Numbers

1-14 as originally filed

Drawings, Sheets

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 13, 14

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 13, 14 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-12
	No: Claims	1
Inventive step (IS)	Yes: Claims	
	No: Claims	1-12
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations

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see separate sheet

Concerning item III

See paragraph V.4 below.

Concerning item V

1. Reference is made to the following document:

D1=WO-A-9944042

2. **Novelty of the subject-matter of independent Claim 1**

Fig. 19 of document D1 depicts a waveguide structure comprising a sensing layer 51 of a medium disposed upon a second layer 52, said second layer being disposed upon a third layer 53 of differing refractive index to the second layer (see D1: page 33, last paragraph, and page 37, last paragraph: the layer 52 is made of silicon nitride, which has a refractive index of 2, and the layer 53 consists of a layer of silica, which has a refractive index of 1.47), in which the structure is capable of supporting a bulk optical mode in the second layer (see D1: page 35, last paragraph, and Fig. 32), the medium being adapted to trap a target particle that results in a change in an optical property of the sensing layer (see D1: page 33, last sentence - page 34, first paragraph).

Therefore, the waveguide structure according to Claim 1 of the application differs from the waveguide structure described above in that the thickness and/or refractive index of the second layer is selected to control the depth of penetration of the optical mode into the sensing layer and to overlap at least a major portion of the particle.

However, since this feature is considered to be a method step which does not precisely define the structure of the claimed waveguide structure, in particular because the thickness and the refractive index to be selected are function of the particle to be sensed, which does not form part of the waveguide structure, it cannot be taken into account for assessing the novelty of the subject-matter of Claim 1.

It results therefrom that document D1 discloses a waveguide structure having all the technical features of the waveguide structure claimed in Claim 1. Accordingly,

the present application does not meet the requirements of Article 33 (2) PCT.

3. Dependent claims

In view of the teaching of document D1 (see the whole document), the dependent claims do not appear to contain any inventive feature. Furthermore, it is unclear which features of the dependent claims are required to solve the problem underlying the invention, namely, to provide a waveguide sensor in which an evanescent field penetrates a sensing layer to a greater extent and overlaps with at least a major proportion of the bulk of the particle (see page 4 of the application, third paragraph).

4. Clarity

Claims 13 and 14 contain references to the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.